50X1-HUM

INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY 50X1-HUM

50X1-HUM

C-O-NF-I-D-E-N-T-I-A L

50X1-HUM

COUNTRY Poland

REPORT

SUBJECT Outbreak of Leptospirosis: Subsequent Field and Clinical Investigations/ Control Measures Taken/Results of Seven-Year Campaign

DATE DISTR. 12 Nov 63

NO. PAGES

REFERENCES 1

DATE OF INFO.

PLACE & DATE ACQ. 50X1-HUM

THIS IS UNEVALUATED INFORMATION

11-page document entitled "A Characteristic 50X1-HUM of A Natural Leptospirosis Focus Found Along the Polish-Russian Confin and Its Liquidation," and written by Jozef Parnas, Adolf Koslak, and Maria Cybulska of the Anthropozooneses Department of the Witold Chodzko Institute for Rural Medicine and Rural Hygiene in Lublin, Poland. As a result of a leptospirosis epidemic in 1955 along the southeastern border between Poland and the Soviet Union, the Witold Chodzko Institute initiated a campaign to study its underlying causes and to determine the most effective methods of control. Over the period between 1955 and 1962, Institute personnel took blood samples from certain portions of the human and animal populations in the villages of Tomaszow, Niemirowek, Rachanie, Tarnawatka, and Krynice, which are located within the infected area. They performed the appropriate serological and bacteriological tests, identified the principal strains of Leptospira, and determined the important animal reservoirs. After developing a vaccine, they used it to inoculate the human populations living in the five villages. In this document, the authors report the purpose of their study, the nature of their various investigations, and the results of their control measures - FOR OFFICIAL USE ONLY.

- end -

5 4 3 2 1

C-O-N-F-I-D-E-N-T-I-A-L

50X1-HUM

5 4 3 2 1

GROUP 1
Excluded from automatic downgrading and declassification

STATE		ARMY		NAVY		AIR		FBI		AEC					

INFORMATION REPORT INFORMATION REPORT

CONTROLLED NO DISSEM ABROAD ~~NO FOREIGN DISSEM~~

DISSEM: The dissemination of this document is limited to civilian employees and active duty military personnel within the intelligence components of the USIB member agencies, and to those senior officials of the member agencies who must act upon the information. However, unless specifically controlled in accordance with paragraph 8 of DCID 1/7, it may be released to those components of the departments and agencies of the U. S. Government directly participating in the production of National Intelligence. IT SHALL NOT BE DISSEMINATED TO CONTRACTORS. It shall not be disseminated to organizations or personnel, including consultants, under a contractual relationship to the U.S. Government without the written permission of the originator.

50X1-HUM

A CHARACTERISTIC OF A NATURAL LEPTOSPIROSIS FOCUS FOUND ALONG THE POLISH --RUSSIAN CONFINES AND ITS LIQUIDATION.

Józef Parnas, Adolf Koślak, Maria Cybulska.

Anthropozoonoses Department of the Witold Chodźko Institute for Rural Medicine and Rural Hygiene in Lublin, Poland.

Introduction.

We performed from 1955 - 1962 investigations in the areal of Tomaszów, belonging to the district Lublin. This areal was a natural focus of leptospirosis of the type grippotyphosa. The second part of this areal lies behind the russian border and showed to be also, during the last years, a focus of swamp fever, evoked by Leptospira grippotyphosa. The whole areal was a great natural leptospirosis focus and embraced many districts lying along the polish-russian border.

Before 1955 leptospirosis epidemics have been noted among people. They occured from time to time in intervals of several years and depend upon meteorological and serological factors. This areal contains a lot of marshes, swampy meadows and pasturages, inhabited by many small mammalians. During certain summers, called "mice summer", a great many of fieldmice

dwelled there, and they evoked, of course leptospirosis epidemics. Some thousand men, working at haymaking, harvest, potato digging and melioration have been embraced by these epidemics. During other years, only sporadic leptospirosis cases had been noted.

Thanks the meteo-climatical conditions and a sudden increase in small mammalians in 1955, a new outbreak of the epidemic has been noted, and 2000 people suffered from this disease. Our Institute organised at this time a scientific expedition, and performed further systhematical investigations from 1955 - 1962.

The aim of these investigations was to elaborate the problem of this epidemic, as well as the ~~focal~~ character of natural leptospirosis focus. The investigations embraced clinics for men, domestic animals and small mammalians; we tried to perform microbiological investigations of strains, isolated from men and mammalians, and to develop a prophylactical activity, underlining melioration as well as people immunisation, in order to wind up the natural focus of leptospirosis, recovered in the villages Niemirówek, Rachanie, Tarnawatka, and Krynice.

Materials and Investigation Methodics.

Our materials were :

a/ 1213 people, living in the natural leptospirosis focus,

b/ 5008 small mammalians, catched in this areal,

c/ 4589 domestic animals living in villages belonging to the infected areals.

Methodic :

Clinicists working in our Institute investigated under the direction of W. Szewczykowski the population. Blood samples had been investigated in the laboratories of our expedition by help of the agglutination reaction. We used the following strains : L. icterohaemorrhagiae, L. canicola,

L. grippotyphosa, L. pomona, L. mitis, L. autumnalis, L. sejroe, L. australis, L. zanoni, L. saxkoebing, L. bataviae, L. poi, L. ballum, L. hebdomadis, and L. schüffneri.

Small mammalians had been catched in meadows, fields, swamps and near lakes, by help of ditch and cylinder methods and in traps. The catched animals were combed and we investigated the ectoparasitic fauna entomologically and microbiologically.

Section performed on small mammalians gave us organic materials, needed for cultures and heart blood for the agglutino reaction. All the materials got from investigated organs had been histopathologically tested. We used the same leptospire strains for investigations of the human serum and for the agglutination test.

Domestic animals have been clinically tested and their blood has been histopathologically tested by help of the following strains : L. icterohaemorrhagiae, L. canicola, L. grippotyphosa, L. pomona, L. mitis, L. sejroe, L. australis, L. zanoni, L. saxkoebing, L. bataviae and L. hebdomadis. We got bloodsamples from men and small mammalians and transplanted it in young guinea pigs.

Results :

400 pacients had been exactly clinically investigated. The morphological changes have been noted on table 1. /Szewczykowski/. The investigations gave serological and clinical results in 1213 people. It showed in serological and bacteriological investigations, that the dominant serotype was L. grippotyphosa /we got 67,2 % for positive serological results and 80,43 % for bacteriological results/. Strains, belonging to the hebdomadis group and first of all strains of L. sejroe took the second place, i.e. 14,0 and 17,39 %/.

Small mammalians:

50X1-HUM

The results of our investigations are noted in table [redacted] 4. [redacted] among 24 kinds of small mammalians /together 5008 50X1-HUM catched animals/ microtus arvalis dominated - 2180, then mus musculus - 1331, microtus ratticeps - 297, arvicola terrestris - 215, and further on cricetus cricetus, sorex araneus and some others.

Among 5008 catched small mammalians, 467 i.e. 9,33 % reacted positively in the agglutination reaction with leptospires. We isolated 88 leptospire strains from animals. L. grippotyphosa took the first place /47 %/, and some strains belonging to the group hebdomadis, like L. sejroe, /18/, and saxkoebing /1/. We furthermore isolated L. poi strains /7/, L. icterohaemorrhagiae /3/, L. bataviae /3/, L. australis /2/ a.s.o.

Table 4 shows the dominant role of L. grippotyphosa and the hebdomadis group.

Domestic animals :

We found that in regard to domestic animals the L. grippotyphosa and the hebdomadis group took the first place. We elaborated an exhausting characteristic of the natural focus of swamp fever, and our investigations lasted eight years. We state, that this focus had a polyhostal character in the sense of Pawłowski. Next microtus arvalis, being the dominant reservoir, we found that mus musculus plays also an important role /leptospires went this way towards the antropurgical center/. Microtus ratticeps and arvicola terrestris played also an important role. The investigated natural leptospirosis focus showed to be the main reservoir of L. grippotyphosa and of the hebdomadis groups. The clinical picture for leptospirosis in men showed it distinctly. The course of the disease was rather a benign one, lethal cases have not been noted.

Prophylactic activities :

The aim of our expedition was to fight against leptospirosis and we began this action in the years 1955 - 1956.

The most important measures were :

a/ melioration of meadows, pasturages and fields

b/ vaccination of men .

Table 5 shows the results of our activity during 1955 - 1962. The melioration works had been performed in 1955/56 on an areal of 1421 ha. In 1957 - 37 ha, in 1958 - 60 ha, in 1959 - 411 ha i.e. alltogether 1939 ha. It was a most important action and we got excellent botanical, phytosociological, ecological and zoological results, which restrained a further developement of the natural focus and leptospirosis reservoir.

In the years 1957, 1958, 1959 qnd 1960, 5166 people had been vaccinated; this people lived in the formerly named villages. When taking under consideration, that every person was two times vaccinated, the number of the performed vaccinations arise to 1032. The vaccine was a product of our Institute and performed by Babudieri's and Warfołomiejewa's method. We used for the/ vaccines ~~of~~ L. grippotyphosa /80 %/ and L. sejroe /20 %/. The vaccine was killed.

The results gained by melioration work and vaccination as well as sanitary education and work hygiene are noted in table 5, which shows that from 1956 we could note a great decline of leptospirosis in men and small mammalians, which lasted till 1962. We tried to understand if the decline is a consequence of

a/ the liquidation of the natural focus, or

b/ a remarkable decline of this desease in men and animals, which under favourable meteoro-climatical conditions could be again subjected to a new epizzotiological and epidemiological exacerbation. One should note, that from 1955 /a year having been especially advantageous for epidemics, thanks

meteoro-climatical conditions/ we had in 1958 and 1961 similar conditions - which could favour a rise of a leptospirosis epidemic.

If epidemics have not been noted, it seems, that it was a result from some new lasting biotopic conditions , especially from zoological ones. Thanks the performed melioration works, we could remark a notable decline in the number of small mammalians, belonging to different kinds, and also a marked decline of carriers. We believe, that the vaccination action played an important role of immunological character. Taking under consideration the cyclic rule for leptospire grippotyphosa and hebdomadis we observed that we have to do with a liquidation of the natural leptospirosis focus., and we do not expect a recidive. The following years will show whether such an argumentation is right.

Conclusions.

In 1955 - 1962 the investigative expedition of the Institute performed systhematical researches in the natural leptospirosis focus. We investigated 1213 persons, 5008 small mammalians and 4589 domestic animals. We found that the strains L. grippotyphosa, as well as strains belonging to the group hebdomadis, like L. sejroe, L. saxkoebing and L. hebdomadis caused leptospirosis epidemics. We confirmed, that the by us tested natural focus was polyhostal and we found about 20 kinds of small mammalians. The chief reservoir of leptospirosis are microtus arvalis, mus musculus, microtus ratticeps and arvicola terrestris.

In order to limit the natural focus i.e. to liquide it, we initiated meliorative works, performed on an areal of 1939 ha of meadows, pasturages and fields. The melioration changed a great deal of botanical, phytosociological conditions in the meliorated ground. Summarizing to 5166 we can say, that 19932 men have been vaccinated. We used for the vaccination a killed vaccine of L. grippotyphosa antigen /80 %/ and L. sejroe /20 %/.

We developed also some other activities, as sanitary instruc-

tion about work hygiene and water hygiene. The results of these efforts showed a remarcable decline in leptospirosis in men /ad minimum/. When evaluating the whole epizootiological and epidemiological situation, the Institute may be right to say, that we atteined the liquidation of a natural focus, which for so long time has been an enormous reservoir for leptospires.

From the methodical point of view, we assume that the investigation of a natural focus by the help of scientific expeditions having been performed through many years and melioration works and vaccines, as well as sanitary instruction including water and work hygiene, are most helpful activities being able to wind up such natural foeci.

R E F E R E N C E S.

1. Anan'in V.V./1955/:"Rezervuary patogennych leptospir v prirode i ich rol v epidemiologii leptospirozov".Ż.Mikr.,Epid. Imun. 4;33.

2. Anan'in V.V.,Karaseva E.V./1961/:"Prirodnaja oczagovost' leptospirozov"/monography/,Medgiz,Moskva.

3. Chorużenko P.F./1957/:"Puti rasprostranenija leptospirozov i borbà s nimi na Ukraine",Vraczevnoje delo 3;269.

4. Eżova N.G./1950/:"Rezultaty serologiczeskoj diagnostiki v zapadnych oblastjach Ukrainy".Tezisy dokladov k sessii Ukrainskich institutov epidemiologii i mikrobiologii v Odesse;58.

5. Karaseva E.V.,Narskaja E.V.,Anan'in V.V./1955/:"Opyt ozdrovlenija prirodnogo oczaga bezżeltusznogo leptospiroza". Ż.M.E.I.4;37.

6. Krasilnikov A.P./1956/:"Istoczniki leptospirozov v Belorussi". Diss.Minsk;1-258.

7. Krasilnikov A.P./1960/:"Materialy k prirodnoj oczagovosti leptospirozov v Belorusskoj SSSR".Problema leptospirozov,3 konferencija,Moskva;59.

8. Krasilnikov A.P.,Grickevicz A.V./1960/:"Antropurgiczeskije oczagi leptospiroza v Belorussi".ŻM.E.I.,6;128.

9. Parnas J./1958/:"Résultats des recherches d'ensemble des expéditions scientifiques des années 1954,55,56 i 57 sur les leptospiroses".Arch.Inst.Pasteur Tunis35;275.

10. Parnas J.,Łazuga K.,Dąbrowski T./1959/:"Issledowanije vodnoj lichoradki v Polsze /1955-57/".Ż.M.E.I.3;79.

11. Parnas J.,Koślak A.,Krukowska M./1961/:"Forschungen über die Leptospirosen Gruppe "Hebdomadis" in den natürlichen Herden der Leptospirose".Arch.Hyg.Bakt.148,8;636.

12.Parnas J.,Koślak A.,Zwolski W.,Szczęśniak N.,Cybulska M./1962/:
"Ein Naturherd der Leptospirose in dem Karpaten-
gebirge".Arch.Hyg.Bakt. 143,3;211.

13.Pavlovskij E.N./1960/:"Prirodnooczagovyje bolezni czeloveka".
Moskva;6.

TABLE NR 5. INVESTIGATIONS DYNAMIC OF PEOPLE, SMALL MAMALIANS AND DOMESTIC ANIMALS PERFORMED IN THE NATURAL FOCUS OF NIEMIRÓWEK (AND ENVIRONMENTS) IN THE YEARS 1955-1962.

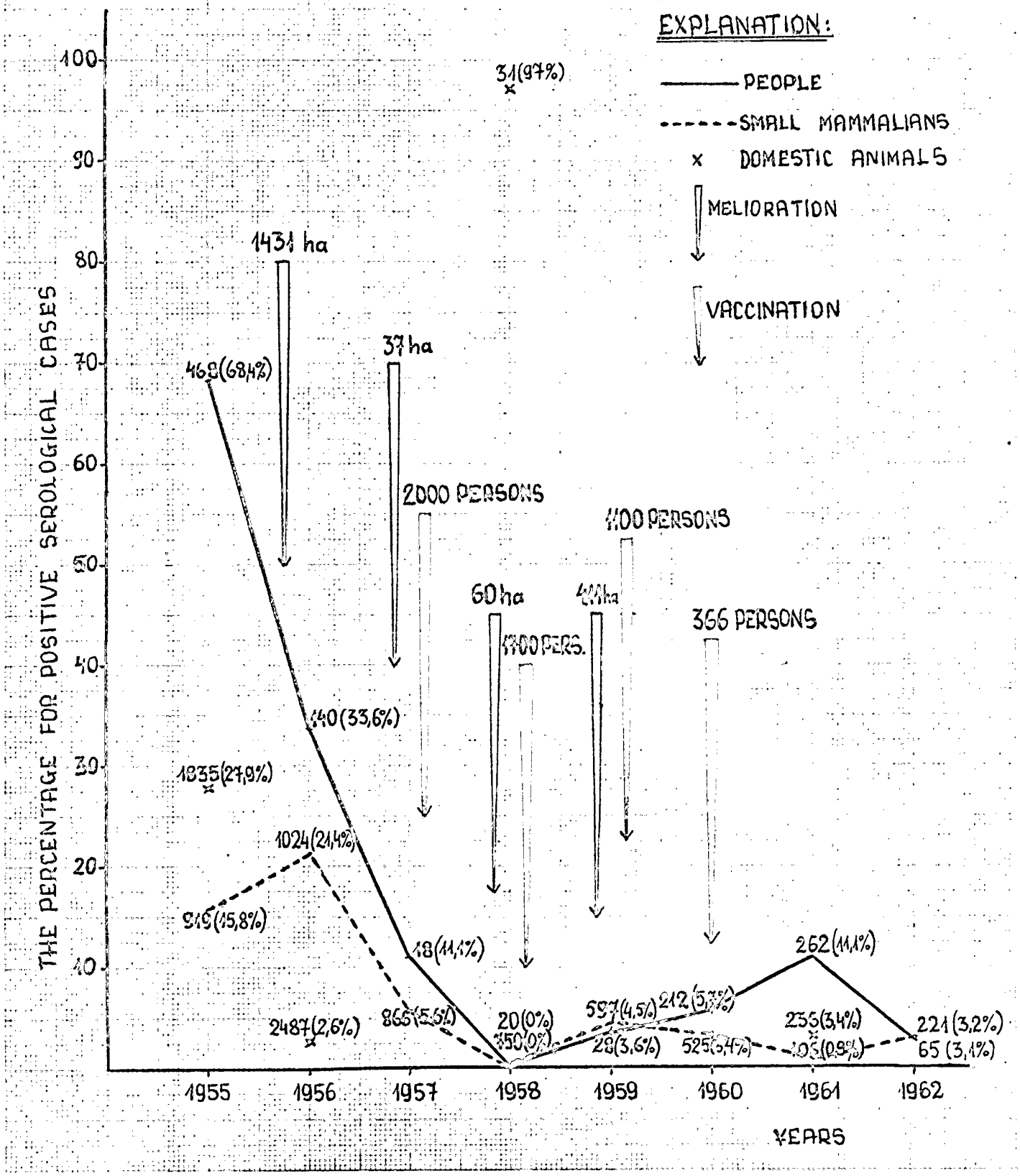

DIAGRAM NR 4. RESULTS OF SEROLOGICAL AND BACTERIOLOGICAL INVESTIGATIONS ON LEPTOSPIROSIS PERFORMED ON SMALL MAMMALIANS IN THE NATURAL FOCUS OF TOMASZÓW LUB. 1955-1962.